

Henshaw, H. W. Ornithology of Nevada and California.



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 APPENDIX I.

REPORT ON THE ORNITHOLOGY OF PORTIONS OF NEVADA AND CALIFORNIA, BY MR. H.
 W. HENSHAW.

UNITED STATES ENGINEER OFFICE,
 GEOGRAPHICAL SURVEYS WEST OF THE 100TH MERIDIAN,
Washington, D. C., April 15, 1877.

SIR: I have the honor to transmit the following report upon the ornithology of the
 region visited by me during the field-season of 1876.

Very respectfully, your obedient servant,

H. W. HENSHAW.

Lieut. GEO. M. WHEELER,
Corps of Engineers, in charge.

My opportunities for investigating the bird fauna of this region began in the vicinity
 of Carson City, Nev., during the last week of August. The rendezvous-camp estab-
 lished here continued till September 15. Up to this date most of my time was occupied
 in making collections in natural history, such points being visited in the neighborhood
 of Carson as were accessible by daily trips. The party, in immediate charge of Lieu-

tenant M. M. Macomb, to which I was attached for the season, left Carson on the 15th of September, and from that date till the termination of my field-work, except a period of ten days from November 10 to the 20th, which I spent at Carson, I was occupied in the immediate vicinity of Lake Tahoe, or in the mountains lying contiguous to it. It will thus be seen that the season's results fall under two distinct heads, according as they were obtained in the valleys to the east of and adjoining the main chain, or were derived from observations in the mountains. In presenting lists of the birds observed, with such notes as I was able to gather, I have thus divided them. In connection with my work it is pleasant to be able to speak of the assistance and co-operation so cordially extended to me by the officer in charge, as well as by the remaining members of the party. Furthermore, I have to gratefully acknowledge the substantial assistance received from Mr. H. G. Parker, of Carson City, Nev., not only in the shape of rare birds, the results of his enthusiastic labors, but also for much information concerning the haunts of birds, which his thorough acquaintance with the country enabled him to supply.

By the last week in August such of the birds as still remained in the neighborhood, and which do not winter here, had either congregated in flocks or were in the act of assembling, preparatory for their departure in search of a more congenial winter climate; while not a few of the less hardy species, as the tanagers, orioles, grosbeaks, &c., had already taken their leave; hence a very considerable number of species that are common to the region as summer visitants were not seen at all by us; from which fact it results that our list of the birds noticed during the season is very far from being a complete enumeration of the actual number of species belonging to this region.

The valley, on the west side of which Carson City is situated, does not possess, owing to the almost complete absence of timber, the natural characteristics which serve to attract a great number of species of birds.

Along the banks of the Carson River, and fringing the borders of the other small streams, especially where they debouch from the mountains, is found a limited amount of shrubbery, which serves to invite and give shelter to the species that usually frequent similar localities. The remainder of the valley, not lying close enough to the streams to admit of irrigation and cultivation, is clothed only and everywhere with sage-brush and grease-wood, and is inhabited by but a limited number of the feathered tribe. The foot-hills and eastern faces of the mountains immediately overlooking the Washoe and Carson Valleys were formerly covered with a dense pine forest, which closely hemmed in the valleys. Within a few years this has been entirely swept away, leaving the hills comparatively, and in some places absolutely, denuded of vegetation. As a consequence, most of the wood-loving species that formerly extended down to, or even into, the valleys, have retreated upward, and now only appear below as occasional stragglers, or in winter.

The avifauna of the region about Carson, the mountains being excluded, offers to our notice little or nothing that is peculiar, or that will serve to distinguish it from that much farther to the eastward. In fact, a large proportion of the forms are those common to the interior province generally, of which the entire eastern portion of Nevada may be regarded as an integral part.

It is only when we leave the plains and low open valleys, and ascend into the foot-hills, that we begin to meet with any well-marked change in the aspect of the bird-life. This change is a somewhat abrupt one, and is quite strictly coincident with the line of demarkation between the valleys and the elevated foot-hills, being hence chiefly indicated by the presence of such species as are pre-eminently mountain forms. Thus in the shrubbery skirting the foot-hills, and in the ravines, we find the California jay (*Cyanocitta* var. *californica*.) Reaching the foot-hills the mountain-quail begins to be numerous.* Still higher up the shrubbery of the mountains was found to be the home of the curious Thick-billed sparrow (*Passerella* var. *megaryncha*.) It is, however, in the pine region proper that the change becomes most marked.

Here are found *Turdus ustulatus*; *Cyanura* var. *frontalis*; *Selasporus rufus*; *Sphyrapicus ruber* and *Picus albolarvatus*.

All of the above species are found as regular summer inhabitants of this region, while the woodpeckers and jays are constant residents.

From the occurrence of these species, which may be regarded as belonging essentially to the Pacific province, along this, the eastern slope of the Sierra Range, we may safely draw the line which shall divide the middle from the Pacific province at the foot of the eastern slope of the mountains, and consider this slope of the main chain as belonging, so far as its avian fauna is concerned, to the Pacific province.†

*As ascertained by Mr. Ridgway, this species is found somewhat farther to the eastward, reaching the mountains by means of the connecting foot-hills. The flocks appear, however, to be little else than stragglers, and with the eastern slope of the main chain this bird ceases to be common, and the species is soon lost altogether.

†Two of the mammals found by us along this slope also point to the same conclusion. The large *Spermophilus* instead of being the interior form *grammurus* is the var. *beechyi* of the Pacific province. Similarly the small *Sciurus* is *douglasii* instead of *richardsoni*.

Below is appended a full list of the Pacific province forms that find their eastern limit along the eastern slope of the main chain.*

I. Species limited by eastern slope:

1. *Zonotrichia coronata*. Fall migrant.
2. *Passerella* var. *megaryncha*. Summer resident.
3. *Pipilo* var. *oregonus*. Resident.
4. *Cyanura* var. *frontalis*. Resident.
5. *Cyanocitta* var. *californica*. Resident.
6. *Picus albolarvatus*. Resident.
7. *Sphyrapicus ruber*. Resident in small numbers; fall migrant.
8. *Oreortyx picta*. Resident.

II. The following Pacific province species find their limit as above in the breeding season, but during the migrations, especially in the fall, they occur more or less frequently at points at variable distances to the eastward:

1. *Turdus pallasii* var. *nanus*. Migrant.
2. *Turdus swainsoni* var. *ustulatus*. Summer resident.
3. ? *Thryothorus bewickii* var. *spilurus*. Resident.
4. *Troglodytes hyemalis* var. *pacificus*. Winter resident.
5. *Helminthophaga celata* var. *lutescens*. Summer resident.
6. *Myiodiotes pusillus* var. *pileolatus*. Summer resident.
7. *Melospiza melodia* var. *heermanni*. Resident.
8. *Melospiza melodia* var. *guttata*. Perhaps accidental. One specimen in West Humboldt Mountains in fall. (Ridgway.)
9. *Junco oregonus*. Resident.
10. *Zonotrichia leucophrys* var. *intermedia*. Summer.
11. † *Agelaius phoeniceus* var. *gubernator*. Summer.
12. † *Nepocetes niger*. Summer.
13. † *Chaetura Vauxii*. Summer.
14. *Selasphorus rufa*. Summer.

As noticed above, the fauna of the plains and valleys to the east of the main chain is, in respect to its summer residents, indistinguishable from that of the middle province.

As showing the sharpness with which the line of demarkation is drawn by the Sierra Range we are able to note but two species, which may be considered as characteristically belonging to the middle province, which, in their range westward, intrude beyond the limit assigned and reach into the mountains. These are *Carpodacus frontalis* and *Pica melanoleuca* var. *hudsonica*. The first is numerous about Lake Tahoe, but does not, so far as I could ascertain, reach to the west of the divide. *Pica hudsonica* scarcely finds its way into the range, but is mostly limited by the foot-hills. A few individuals, however, were noticed by us on the borders of Tahoe.

Of the specimens procured along the eastern slope during the season a number have proved of especial interest, as illustrating the differentiation which takes place in a species or variety when found at a point remote from the locality or region where its peculiarities attain their maximum development, and which consequently may be considered its true home.

The eastern slope of the Sierras, though belonging, as has been shown, to the Pacific province, occupies a somewhat intermediate position between the Pacific and Middle provinces, and, as it differs climatically more or less from either region, its birds might be supposed to indicate to some extent, in plumage or otherwise, the changes undergone in the conditions of environment. Such has been found to be true. This is best illustrated in the cases of several birds that are represented by different varieties in the two provinces. In all such instances, while they are seen to partake more largely of the characteristics pertaining to the Pacific forms, they are yet, to a very appreciable extent, intermediate, and, when compared with their respective types from the west coast, will be seen to divaricate directly toward the conditions distinguishing the middle province forms. Thus the Californian jays (*Cyanocitta floridana* var. *californica*) of the eastern slope not only have smaller bills and feet than coast examples, but their colors throughout are decidedly lighter, thus approaching in characteristics the var. *woodhousei* of the interior, which in its typical form begins to occur only in the eastern part of Nevada. Similar differences, though not carried to the same extent, are found in the Steller's jay, in the variety known as var. *frontalis*, which, though confined to the Sierras, becomes somewhat lighter colored, with smaller bill, at its eastern limit than in the Californian coast range on the west.

* For a number of these, as well as for indications of the character of their occurrence, I am indebted to the admirable list of Mr. Ridgway; vide Bull. Essex Institute, vol. 6, No. 10; vol. VII, Nos. 1 and 2; and also in several instances to verbal notes furnished by him.

† These three birds breed in the valleys adjoining the mountains.

The Western Orange-crowned Warbler, (*Helminthophaga celata* var. *lutescens*), which is distinguished varietally, as it occurs on the west coast, mainly by its brighter coloration, is here decidedly paler, though still approximating more closely to this than to the interior and eastern form, *H. celata*. The same is true of *Myiodioetes pusillus* var. *pileolatus* as compared with *M. pusillus*. The Song Sparrow of this region, though referable to the Pacific type, (*Melospiza melodia* var. *heermanni*), yet very distinctly approaches the *M.* var. *fallax* of the middle province, and only a short distance to the east of the main chain will be found to merge into the latter. Perhaps, however, in no bird is this tendency toward variation better shown than in the remarkable thick-billed sparrow, (*Passerella iliaca* var. *megaryncha*.) In its typical region, the southern coast range of California, the bill of this bird is enormously developed, till it becomes almost misshapen through its extreme depth. Coincident with this is a change of color, it being several shades darker than its representative from the interior, *P.* var. *schistacea*. Examples from the eastern slope, though unmistakably of this variety, show in the modification of these peculiarities that many steps have been taken toward the *schistacea* form. The colors are lighter; the bill, though still much larger than is ever found in the latter bird, is perhaps scarcely half the size found in extreme examples of *P.* var. *megaryncha*. Other species showing a similar tendency might also be cited, all having the same significance, viz, a differentiation from the typical condition of their respective forms toward the interior type, coincident with their intermediate habitat.

The small number of species of the Warbler family (*Sylvicolidæ*) represented in the Sierra Range, as remarked by us during the season of 1875 in California, and again the past season on the eastern slope, as compared with the number found in the Rocky Mountains, is a matter of much interest. When the comparison is extended to the middle and Pacific provinces proper, nearly the same numerical ratio is found to exist. Noticeable as this is in the cases of these two provinces, when a like comparison is made with the eastern province, a much greater discrepancy in the number of this group is seen. To so great an extent is this true that in a division of the continent into two longitudinal sections this family would enter as a very important factor of the problem, the number of Warblers found in the eastern province, (its divisional line being drawn at about the one-hundredth meridian,) as compared with the western half, being nearly as two to one. No fewer than forty-two species of Warblers inhabit the eastern region. The greater proportion of these occur in the extreme eastern part, being there distributed to the several avian faunas that have been marked out from along its southern border to its northernmost limits. The greatest number of species occur towards its northern portions, especially in the Alleghanian and Canadian faunas as restricted; those whose habitat is northern, visit, of course, the lower faunas in their migrations.

As localities to the westward are noted it will be found that the number of species diminishes, and several birds are lost sight of ere reaching the Mississippi River. On its western edge the eastern province loses quite a large proportion of its characteristic species, no fewer than fourteen which occur along its eastern half, being absent in Kansas. A small percentage of eastern species still persist when the middle province is entered, some of them being found clear across the continent, forming, indeed, the larger percentage of the sylvicoline avi-fauna.

The following is a list of the eastern species that remain when the middle province is reached:

1. *Helminthophaga celata*.
2. *Dendroica aestiva*.
3. *Geothlypis trichas*.
4. *Icteria virens*.
5. *Myiodioetes pusillus*.
6. *Setophaga ruticilla*.

Helminthophaga ruficapilla, *Dendroica coronata*, *D. striata*, *D. maculosa*, and *Seiurus noveboracensis* have all been found more or less numerously in Colorado and elsewhere within the limits of the middle region. They do not, however, breed there, but occur only as migrants in spring or fall as they pass to or from their northern summer haunts within the eastern province; hence they are not included in the above list.

To those enumerated are to be added several species which are characteristic of the middle province, in so far at least as they are not found at all within the limits of the eastern; one or two of these occur, so far as known, only as migrants, their proper habitat being the Pacific province; several are confined to the extreme southern portion of the Rocky Mountains; three only are confined to this province.

The additional species are:

7. *Helminthophaga luciae*.
8. *Helminthophaga virginiae*.
9. *Dendroica occidentalis*.
10. *Dendroica townsendi*.
11. *Dendroica nigrescens*.

12. *Dendroica audubonii*.
13. *Dendroica olivacea*.
14. *Dendroica gracia*.
15. *Geothlypis macgillivrayi*.
16. *Setophaga picta*.
17. *Cardellina rubrifrons*.

Helminthophaga lucia, *virginia*, and *Dendroica gracia*, are the only ones belonging exclusively to this region.

Of *Dendroica occidentalis*, *townsendii*, and *nigrescens*, the two first come more properly within the Pacific province, as they breed about the Columbia River and Northern Sierras, and only find their way to the Rocky Mountains during the fall migrations, and then to the southern portions of the chain. *Dendroica nigrescens* is equally an inhabitant of both regions. *Dendroica olivacea*, *Setophaga picta*, and *Cardellina rubrifrons* only occur in our territory in Southern Arizona. This portion of that Territory, as well as the corresponding part of New Mexico, faunally considered, belongs with and is indivisible from Northern Mexico.

Leaving the middle region and approaching the Pacific coast, we find that the number of warblers still diminishes, whether we consider the mountains proper, or the low coast regions. In this province we find no species which we have not recognized in one or the other of the two provinces mentioned, though *D. occidentalis* and *D. townsendii* are characteristic of this province as summer residents.

The following is the list:

1. *Helminthophaga ruficapilla*.
2. *Helminthophaga celata* var. *lutescens*.
3. *Dendroica aestiva*.
4. *Dendroica occidentalis*.
5. *Dendroica townsendii*.
6. *Dendroica nigrescens*.
7. *Dendroica coronata*?
8. *Dendroica audubonii*.
9. *Geothlypis trichas*.
10. *Geothlypis macgillivrayi*.
11. *Icteria virens*.
12. *Myiodioctes pusillus* var. *pileolatus*.

Two instances are to be noted here where birds continuing unchanged as they pass from the eastern into the middle province, are in the Pacific region differentiated into varieties, namely, *Helminthophaga* var. *lutescens* and *Myiodioctes* var. *pileolata*.

The evident preponderance of the number of species of this group in the Eastern United States; taken in connection with the fact that so large a proportion of the forms that occur in the western half of the country are eastern species, but little changed, or, as in most instances, actually the same, and that so few are peculiar to that region, seems strongly to favor the assumption that it was in the East that the family had its origin, and that few, perhaps none, of the group were indigenous to the West.

A further consideration of the number of warblers inhabiting the more northern and eastern parts of North America, in comparison with those of the southern parts of Mexico and South America, seems to point to the conclusion that the original center of the family was actually in this (the former) region, and that it radiated out from a comparatively circumscribed area, to become firmly established in and indigenous to the sections where it now flourishes. The Canadian and Hudsonian faunas, as restricted by Allen, receive a larger proportion of warblers in the breeding season than are to be found in any other region of North America of similar extent.

In his geographical distribution of mammals, Wallace arrives at a similar conclusion respecting the *Motacillidae*, (warblers,) giving their probable origin as North-Temperate America.

LIST OF BIRDS OBSERVED NEAR CARSON CITY, NEV., FROM AUGUST 25 TO SEPTEMBER 16,
AND FROM NOVEMBER 10 TO NOVEMBER 20, 1876, WITH NOTES.

TURDIDÆ.

1. *Turdus migratorius*, L., var. *propinquus*, R.—Nevada Robin.

Under the above name Mr. Ridgway has recently described a western variety of the robin, and has indicated certain differences that obtain in the species as it occurs from the eastern base of the Rocky Mountains westward, as compared with examples of the bird from the region east of the Missouri Plains.

The specimens we have seen from Nevada correspond well with his diagnosis of the above bird, and, while we cannot consider the forms in question as illustrating "two

very strongly marked geographical races," they yet appear to be admissible as slight varietal forms.

Apparently not a common species in the valleys during the summer and fall; said to be abundant in the early spring months along the water-courses.

2. *Oreoscoptes montanus* (Townsend).—Sage Thrush.

Fairly numerous amongst the sage-brush. The Sierras appear to limit absolutely the westward range of this species, and it seems to be entirely wanting in California, except in the extreme southern portion, where it reaches across the southern line quite to the coast; so to the northward, where it finds no lofty mountain barriers, it extends to the Columbia River.

SAXICOLIDÆ.

3. *Sialia mexicana*, Sw.—Western Bluebird.

Common.

4. *Sialia arctica*, Sw.—Arctic Bluebird.

Noted about Carson in November, when it frequented the cedar and piñon hills, descending at this season from the mountains, where found earlier.

SYLVIIDÆ.

5. *Regulus calendula*, (L.).—Ruby-crowned Wren.

Quite numerous in the cottonwoods and in the shrubbery of the streams.

PARIDÆ.

6. *Parus montanus*, Gamb.—Mountain Chickadee.

Though, as its name implies, a lover of the mountains, where an inhabitant of the conifers, it yet in fall descends lower, and in the depth of winter is found quite commonly among the deciduous vegetation of the valleys.

TROGLODYTIDÆ.

7. *Troglodytes ædon*, V., var. *parkmanni* (Aud.).—Parkman's Wren.

Not common; not seen about houses, but frequenting the shrubbery.

8. *Cistothorus palustris*, Wils., var. *paludicola*, Bd.—Long-billed Marsh Wren.

The sedgy margins of Washoe Lake contain thousands of these noisy little wrens, which winter here.

MOTACILLIDÆ.

9. *Anthus ludovicianus* (Gm.).—Titlark.

Not seen about Carson in September, but found on my return in November in small numbers. Found along water-courses, but chiefly in wet, meadowy ground or among stubble.

SYLVICOLIDÆ.

10. *Helminthophaga cclata* (Say), var. *lutescens*, Ridgw.—Western Orange-crowned Warbler.

Occurs in small numbers in fall in the shrubbery that skirts the foot-hills.

11. *Dendroica audubonii* (Townsend).—Audubon's Warbler.

Appearing in the valleys only during the migrations.

12. *Geothlypis trichas* (L.).—Maryland Yellowthroat.

A few of this species were seen till into September. They are quite numerous earlier, breeding in the low portions of the valleys.

13. *Myiodiocetes pusillus* (Wils.), var. *pileolata*, Ridgw.—Western Black Cap.

One or two seen along the borders of Washoe Lake.

LANIIDÆ.

14. *Collurio borealis* (V.).—Great Northern Shrike.

Makes its appearance about Carson from the north in October. Saw several.

15. *Collurio ludovicianus* (L.), var. *excubitoroides* (Sw.).—Western Loggerhead Shrike.

Appears to be resident in considerable numbers. Quite common in November.

FRINGILLIDÆ.

16. *Carpodacus frontalis* (Say).—House Finch.

Abundant; frequenting especially, and in large flocks, the shrubbery along the Carson River.

17. *Passerculus savanna* (Wils.), var. *alaudinus*, Bon.—Western Savanna Sparrow.

Numerous in wet ground.

18. *Poocetes gramineus* (Gm.), var. *confinis*, Bd.—Western Grass Finch.

Common among the sage-brush.

19. *Melospiza melodia* (Wils.), var. *heermanni*, Bd.—Heerman's Song Sparrow.

I saw but few of this sparrow in the valleys. It however occurs about Carson, according to Mr. Ridgway, as a common summer resident, and a greater or less number winter.

20. *Poospiza belli* (Cass.), var. *nevadensis*, Ridgw.—Artemisia Sparrow.

The artemisia wastes are peculiarly suited to the habits of this species, and all the year round it may be found in the same localities. It builds its nest in the sage-bush in summer, and as fall approaches the flocks congregate together, not to leave their desolate surroundings, but to wander hither and thither in more extended circles over the same hunting-grounds.

21. *Junco oregonus* (Townsend).—Oregon Snowbird.

In fall and winter numerous in the valleys.

22. *Spizella socialis* (Wils.), var. *arizonæ* (Coues).—Arizona Chipping Sparrow.

Common in summer.

23. *Spizella breweri*, Cass.—Brewer's Sparrow.

Very numerous, inhabiting the sage-brush.

24. *Zonotrichia leucophrys* (Forst.), var. *intermedia*, Ridgw.

This species remains in the mountains till late in the fall, but, gradually descending, becomes by November quite common in the low valleys, where among the brush-wood it remains during the winter.

25. *Chondestes grammacus* (Say).—Lark Finch.

Tolerably numerous. I saw more individuals in November than in August. Frequents at this season for the most part open ground.

26. *Cyanospiza amœna* (Say).—Lazuli Finch.

By the latter part of August nearly all this species had migrated to the south, and only an occasional individual was seen. Numerous in summer.

ICTERIDÆ.

27. *Agelaius phœniceus* (L.).—Red-winged Blackbird.

This is the common species of the marshes about Carson, and of the region generally. This appears to be its western limit. The *A.* var. *gubernator*, according to Mr. Ridgway also occurs in the marshes.

28. *Xanthocephalus icterocephalus* (Bp.).—Yellow-headed Blackbird.

This bird does not appear to be found in any considerable numbers in this locality. They were more or less common in November about the tulle sloughs, and remain during the winter.

29. *Sturnella magna* (L.), var. *neglecta*.—Western Meadow Lark.

Very numerous both in summer and winter, being chiefly found in the pastures, but frequenting to some extent the sage-brush.

30. *Scolecophagus cyanocephalus* (Gm.).—Brewer's Blackbird.

More numerous even than the red-wings, as, too, more generally distributed. In winter they may be seen in almost any situation.

CORVIDÆ.

31. *Corvus corax* L., var. *carnivorus* Bartr.—American Raven.

A common resident.

32. *Gymnokitta cyanocephala* Maxim.—Blue Crow.

Not an inhabitant of the valleys proper at any season, but often seen in large flocks flying from one range of piñon hills to another. They are resident, and breed among the piñons.

33. *Pica melanoleuca* (L.), var. *hudsonica*, Sab.—Magpie.

The magpie is a very common inhabitant of the valleys, being naturally fond of the densest thickets that fringe the various streams, where they build their nests. The bird plays an important role as a scavenger, and the slaughter-houses form the centers around which all the individuals of a locality congregate.

34. *Cyanocitta floridana* (Bartr.), var. *californica*, Vigors.—Californian Ground Jay.

This species crosses the Sierra range, and is found along the eastern slope of the mountains. It reaches, however, no farther than the foot-hills, but is soon replaced to the east by the closely allied form, the Woodhouse's Jay, (*Cyanocitta* var. *woodhousei*.) I found it numerous in the brush of the foot-hills; not present in the pine woods of the mountains. By November all had passed farther south.

TYRANNIDÆ.

35. *Tyrannus verticalis*, Say.—Arkansas Flycatcher.

A very abundant species about Carson, where they nest in the shade-trees along the streets. They leave for the south in August, and by the last of the month all had departed.

36. *Sayornis sayus* (Bon.).—Say's Flycatcher.

A single specimen was taken September 8. The species is doubtless a common one during the summer.

ALCEDINIDÆ.

37. *Ceryle alcyon* (L.).—Kingfisher.

Common on all the streams.

CAPRIMULGIDÆ.

38. *Antrostomus nuttalli* (Aud.).—Nuttall's Poorwill.

Present in considerable numbers during summer. The species migrates during the month of September, and is then very frequently started up from among the scrub and brush of the hillsides.

39. *Chordeiles popetue* (Vieill.), var. *henryi*, Cass.—Western Night-Hawk.

Numerous in the valleys. All had disappeared by the last of August.

TROCHILIDÆ.

40. *Selasphorus rufus* (Gmel.).—Rufous-backed Humming Bird.

An occasional individual seen, which had strayed down from the neighboring mountains. Probably not found in the valleys at all in summer.

PICIDÆ.

41. *Picus villosus* (L.), var. *harrisii*, Aud.—Harris's Woodpecker.

Not common in the valleys, but occasionally seen in the trees about Carson in the fall.

42. *Colaptes mexicanus* (Swains.).—Red-shafted Flicker.

Quite common in the valleys in summer; more numerous in fall.

STRIGIDÆ.

43. *Otus vulgaris* (L). var. *wilsonianus* (Less.).—Long-eared Owl.

The only arboreal species that is at all common in the valleys. This bird is very numerous and lives the year round in the little copses of willows and the denser thickets bordering the swampy lands. Their food consists almost exclusively of field-mice, of which they kill vast numbers, a fact which should earn them the protection of the farmers.

44. *Spotyto cunicularia* (Mol.), var. *hypugwa* (Bon.).—Burrowing Owl.

An abundant resident in some of the high pasture lands about Carson, their location being only determined by the presence of suitable burrows made by the several species of ground-squirrels (*Spermophilus*.)

FALCONIDÆ.

45. *Falco communis* Gmel., var. *anatum*, Bon.—Duck Hawk.

In fall making its appearance in considerable numbers along the sloughs and on the borders of the lakes, where it is always ready to capture the water-fowl disabled by the gunners. Its powers of wing are ample to enable it to overtake, in fair pursuit, any of the ducks, and many fall its victims.

46. *Falco sparverius* L.—Sparrow Hawk.

Numerous.

47. *Pandion haliaetus* (L.).—var. *carolinensis*, Gmel.—Fish Hawk.

Common on the lakes and streams.

48. *Circus cyaneus* (L.). var. *hudsonius*, L.—Marsh Hawk.

The most abundant of all the predatory birds. Exceeding numerous in the marshes. Never, I think, interfering with the water-fowl, except when wounded, and deriving its subsistence chiefly from the smaller species of rodents.

49. *Buteo borealis* (Gmel.), var. *calurus*, Cass.—Western Red-tailed Hawk.

Not very common; and seen in the low valleys only in fall and winter.

50. *Archibuteo lagopus* (Brunn.), var. *sancti-johannis*.—Rough-legged Hawk.

Coming down from the mountains in considerable numbers as fall approaches, and like the Duck Hawk, making its headquarters about the sloughs and open sheets of water. Its chief dependence are mice, but it also seizes many wounded ducks.

51. *Aquila chrysaetus* (L.).—Golden Eagle.

Mr. Parker presented me with a specimen of this eagle, which he had killed in the fall near Carson. Its occurrence so low down is not common.

52. *Rhinogryphus aura* (L.).—Red-headed Vulture.

Numerous about Carson, where very useful as a scavenger.

COLUMBIDÆ.

53. *Zenaidura carolinensis* (L.).—Carolina Dove.

Abounds in the low valleys everywhere.

PERDICIDÆ.

54. *Oreortyx picta* (Dougl.).—Mountain Quail.

Scarcely found in the valleys, yet ranging from the high mountains over the foothills, and so occasionally met with in the valleys, or at the head of ravines, whither they resort after water.

55. *Lophortyx californicus* (Shaw.).—California Valley Quail.

A few have been introduced about Carson, as I was informed by Mr. Parker. They do not appear to increase at a very rapid rate.

CHARADRIIDÆ.

56. *Aegialitis vocifera* (L.).—Killdeer.

Numerous in summer and fall, becoming rarer as the season advances, and probably but few actually winter in this vicinity.

RECURVIROSTRIDÆ.

57. *Recurvirostra americana*, Gmel.—American Avocet.

Rather abundant during the migrations; many breed about Washoe Lake.

SCOLOPACIDÆ.

58. *Gallinago wilsonii* (Temm.).—Wilson's Snipe.

Not abundant, but still found in considerable numbers, especially during the fall migration. A few doubtless winter.

59. *Ereunetes pusillus* (L.).—Semi palmated Sandpiper.

60. *Totanus melanoleucus* (Gmel.).—Greater Yellowlegs.

Of frequent occurrence in spring and fall, during the migrations.

ARDEIDÆ.

61. *Ardea herodias* L.—Great Blue Heron.

Common.

62. *Herodias egretta* (Gmel.).—Great White Egret.

An occasional individual seen.

63. *Botaurus minor* Gmel.—Bittern.

Very common in the marshes.

RALLIDÆ.

64. *Rallus virginianus* L.—Virginia Rail.

Rather numerous.

The *Porzana carolina* was not seen by us, but was found by Mr. Ridgway breeding in the Truckee Valley, and doubtless it is found in all the marshes of this vicinity.

65. *Fulica americana* Gm.—Coot.

Breeds in great numbers in the tules of Washoe and other lakes of this region. In fall appears in immense numbers.

ANATIDÆ.

66. *Cygnus buccinator* Richardson.—Trumpeter Swan.

Mr. Parker informed me that occasionally a swan strayed on to Washoe Lake. At the sink of the Carson River this swan is found in fall in very great numbers.

67. *Anser hyperboreus* Pall.—Snow Goose.

Coming from the north in large flocks in October and November.

68. *Branta canadensis* (L.).—Canada Goose.

Migrants from the north appear in the fall in large flocks; some merely make a temporary sojourn, and continue their course southward. Many of those arriving late remain about the lakes all winter.

69. *Branta canadensis* (L.), var. *leucopareia* (Brandt).—White-collared Goose.

A single individual of the above variety, one of a small flock, was shot in November by my friend Mr. Parker. The three forms of the Canada goose (*canadensis*, *hutchinsii*, and *leucopareia*) appear to come from the north in associate bands, the flocks being often composed in this locality of varying numbers of either bird.

70. *Dendrocygna fulva* (Gm.) Burm.—Fulvous Tree Duck.

With a habitat extending far down into Central and South America, this duck yet occurs along our southern borders, and it is probable with greater regularity and in more considerable numbers than the isolated records of its capture would seem to imply. A specimen is in the Smithsonian from New Orleans, and the species was found at the mouth of the Colorado River by Dr. Palmer. It was detected at Fort Tejon, Southern California, by Xantus, while as high up as San Francisco it seems to be of not very unusual occurrence.

To the notices above is to be added the fact of its occurrence at Washoe Lake, Nevada, where the species was found by my friend Mr. Parker in the early part of this year (1877). He succeeded in shooting three out of several large flocks, one of which specimens is now before me. As this neighborhood is almost destitute of trees, it is certain they do not spend the summer here, but probably pass on to some of the heavily-timbered valleys, as the Lower Truckee, which would appear well adapted to their peculiar arboreal habits. Their occurrence here may, however, be somewhat of an accidental nature, as Mr. Parker writes that they were seemingly driven in with myriads of other fowl by a severe snow-storm, and that neither himself nor any of the gunners of that vicinity had ever seen them about the lake before. Notwithstanding which fact, it is by no means unlikely that future investigations will show the bird to be a regular summer resident of such portions of this region as are suited to its needs.

71. *Anas boschas* L.—Mallard.

A common summer resident; very abundant in fall and winter.

72. *Dafila acuta* L.—Pintail.

Most abundant in the late fall, when, with other species, it appears from farther north.

73. *Chaulelasmus streperus* (L.).—Gadwall.

Breeds commonly, and in fall is numerically one of the best represented of the family.

74. *Mareca americana* (Gm.).—Baldpate.

Very numerous, especially late in fall.

75. *Querquedula carolinensis* (Gm.).—Green-winged Teal.

Very numerous. Is in August and early September perhaps the most numerous represented of any of the family.

76. *Querquedula discors* (L.).—Blue-winged Teal.

Not nearly so common as either of the other two species.

77. *Querquedula cyanoptera* (V.).—Red-breasted Teal.

It breeds in great numbers in the region generally. I believe it migrates south earlier than any other species. I failed to detect its presence in November, and think none remain to winter.

78. *Spatula clypeata* (L.).—Shoveller.

Very abundant, both as a summer resident and a fall migrant.

79. *Aix sponsa* (L.).—Summer Duck.

Rather uncommon.

80. *Fuligula marila* (L.).—Greater Blackhead.

One of the later arrivals in fall from the north. Abundant.

81. *Fuligula marila* (L.), var. *affinis*, Eyton.—Lesser Blackhead.

Like the preceding.

82. *Fuligula collaris* (Donovan).—Ring-necked Duck.

Breeds abundantly in the various lakes. I found the young as late as September 3 still unable to fly.

83. *Fuligula ferina* (L.), var. *americana* (Eyton).—Redhead.

Present in the fall, but never, I think, in great numbers.

84. *Fuligula vallisneria* (Wils.).—Canvas-back.

Was told by Mr. Parker that he had shot quite a number of this species about Washoe Lake.

85. *Bucephala albeola* (L.).—Buffle-headed Duck.

In considerable numbers in fall.

86. *Mergus serrator* (L.).—Red-breasted Merganser.

Numerous.

87. *Mergus cucullatus* (L.).—Hooded Merganser.

Quite abundant, but occurring late in fall.

88. *Erismatura rubida* (Wils.).—Ruddy Duck.

Apparently not very common.

PELECANIDÆ.

89. *Pelecanus trachyrhynchus* Lath.—White Pelican.

Only appearing on Washoe Lake in fall, and in small numbers. Said to breed in great numbers on Pyramid Lake, to the north.

GRACULIDÆ.

90. *Graculus dilophus* (Sw.).—Double-crested Cormorant.

This cormorant is found on the various lakes in summer.

LARIDÆ.

91. *Larus delawarensis* Ord.—Ring-billed Gull.

This gull was found in great numbers on Washoe Lake in September and October. During the fall its distribution throughout this region is very general, and wherever found it is abundant.

92. *Larus californicus* Lawr.—Californian Gull.

Mingled with the preceding were a few of this species or variety.

The relationship of these two birds appears not to be thoroughly established yet, and in a series of eight specimens from Washoe and Tahoe Lakes, I find several in the immature plumage which I assign with difficulty. In adult plumage the present bird is said to have a larger bill than the preceding species, and to present some distinctive points of coloration, especially in its darker mantle. The only adult bird I have agrees well with the diagnosis, but in the case of the immature plumage there appear to be no thoroughly reliable distinctive characteristics which will serve to distinguish the two species.

93. *Sterna regia* Gambel.—Royal Tern.

Found on Washoe Lake in small numbers late in the fall.

94. *Hydrochelidon fissipes* (L.).—Black Tern.

Seen in small numbers on Washoe Lake in August. None were present in November.

COLYMBIDÆ.

95. *Colymbus torquatus* Brunn.—Great Northern Diver.

Present on Washoe Lake in November, where I saw two individuals. Was informed, however, that its occurrence here was unusual. Its dispersion over all portions of the west in fall and winter appears to be general.

PODICIPIDÆ.

96. *Podiceps (Aemophorus) occidentalis* Lawr.—Western Grebe.

Breeds abundantly in Washoe Lake. The young still in the down were taken August 31. One of the main subgeneric characters of this bird is the absence of colored ruffs or other nuptial ornaments about the head during the breeding season, it thus forming a striking exception to the general rule obtaining in the family. The young, the first I believe ever taken, are now before me, from the above locality. They scarcely need description, more than that conveyed in the general statement that in the distribution of colors they almost exactly resemble the old birds. In this respect they seem to carry out the peculiarities of their parents, inasmuch as the young of the other grebes are all, so far as I am aware, curiously streaked or mottled in their first or downy plumage.

LIST OF BIRDS OBSERVED ON THE EASTERN SLOPE OF THE SIERRAS, NEAR CARSON CITY, NEVADA, FROM SEPT. 16 to NOV. 7; WITH NOTES.

TURDIDÆ.

1. *Turdus migratorius* L., var. *propinquus* Ridgw.—Nevada Robin.

During the month of September the Robins began to be rather numerous along the mountain sides, the number of those resident here during the summer having doubtless been increased by the arrival of birds reared farther to the north, while they were rendered more conspicuous from the fact of their having flocked. In early November they were seen in great flocks at different localities, where were found various kinds of wild berries. The majority of these birds, if not all, pass farther south to winter.

2. *Turdus naevius* Gm.—Varied Thrush.

A male of this species which I saw confined in a cage in a store in Carson City was said by the owner to have been captured during the previous spring in the adjoining mountains. For this statement I cannot vouch, but give it for what it is worth. This thrush has never been recorded from any locality east of the Sierras; yet there seems to be no reason why during the migrations, as in the case of other birds possessing a similar summer habitat, the species may not occur along the eastern slope. That it actually does so, however, remains to be proven.

SAXICOLIDÆ.

3. *Sialia mexicana* Sw.—Mexican Bluebird.

During the month of September and early October this species was rather numerous among the pines at an elevation of about 7,000 feet. After this fewer were seen, a partial emigration having perhaps taken place, or, as is more likely, the species having retired from the high altitudes to the valleys, where they winter in considerable numbers.

4. *Sialia arctica* Sw.—Arctic Bluebird.

At the time the preceding species began to diminish in numbers the present bird attracted attention by a corresponding increase, and it soon almost wholly represented the other in the mountain region. They winter among the pines and in the brushy ravines, forming a close association with the Titmice, Nuthatches, etc.

SYLVIIDÆ.

5. *Regulus calendula* (L.).—Ruby-crowned Kinglet.

Abundant during the fall months among the pines, sometimes in small companies of their own species, but more often distributing themselves by twos and threes among the flocks of winter birds.

PARIDÆ.

6. *Lophophanes inornatus* (Gamb.).—Plain Titmouse.

A resident, but not very numerous. Inclined to favor with its presence the cedar and piñon hills rather than the pine region proper, from which, however, it is not entirely absent.

7. *Parus montanus* (Gamb.).—Mountain Chickadee.

Appears to be the only other representative of the family in this region. A constant resident of the pineries.

SITTIDÆ.

8. *Sitta carolinensis* Gm.; var. *aculeata*, Cass.—Slender-billed Nuthatch.

An abundant resident of the pine timber.

9. *Sitta pygmaea* Vig.—Pygmy Nuthatch.

The most abundant of the tribe, keeping exclusively in the pines, among which they wander in large flocks.

CERTHIIDÆ.

10. *Certhia familiaris* L., var. *americana*, Bon.—American Creeper.

Only a few seen, and these among the pines.

SYLVICOLIDÆ.

11. *Helminthophaga celata* Say, var. *lutescens* Ridgw.—Western Orange-crowned Warbler.

This variety was found rather common during September about Lake Tahoe, frequenting chiefly the brushy thickets on the mountain sides. It probably breeds all along the eastern slope.

12. *Dendroica audubonii* (Townsend).—Audubon's Warbler.

The only numerously represented species of the family. Not, I think, nearly as abundant as in the Rocky Mountains at the corresponding season. Keeping generally in the pines, but also seizing much of its food from the ground.

TANAGRIDÆ.

13. *Pyrrhula ludoviciana* (Wils.).—Louisiana Tanager.

A very much belated individual of this species was seen September 18. The species had passed south long before.

AMPELIDÆ.

14. *Myiadestes townsendii* (And.).—Townsend's Solitaire.

None seen till the first days of October; after this, small companies were occasionally noted in various localities through the mountains. Probably more or less pass the summer on the higher summits.

FRINGILLIDÆ.

15. *Carpodacus cassinii* Bd.—Cassin's Purple Finch.

In September this Finch was not uncommon about Lake Tahoe. After which none were seen, the species having migrated. It is a summer resident in this region.

16. *Melospiza melodia* var. *heermanni* (Bd.).—Heermann's Song Sparrow.

Quite rare among the mountains. Occasionally one seen in October in the thickets along the streams.

All examples of the Song Sparrow I have seen from this region, while referable to the above variety, yet mark quite a decided step in the advance towards the central region form, the *M.* var. *fallax*. They are not so dark colored as specimens from the California coast, and the bills appear to be somewhat slenderer, approximating in these particulars to *fallax*.

17. *Junco oregonus* (Townsend).—Oregon Snowbird.

Very abundant everywhere. I presume this hardy species winters in the mountains; at least many remain till the snow falls to a considerable depth.

18. *Zonotrichia leucoprys* (Forst.), var. *intermedia* Ridgw.—Western White-crowned Sparrow.

This bird was found by Mr. Ridgway breeding abundantly on the eastern slope. It

is found all over the mountains, and in fall crosses the range, and is found but little less abundantly in Southern California.

NOTE.—The *Zonotrichia leucophrys*, though not noted by us, doubtless occurs mingled with flocks of the above bird, especially as it was found by us in Southern California.

19. *Zonotrichia coronata* (Pall.).—Golden-crowned Sparrow.

The great mass of these sparrows, in their journey southward, keeps on the western slope of the Sierras. It occurs, too, along the eastern spurs in fall, but, comparatively speaking, in very small numbers.

20. *Passerella iliaca* (Merr), var. *megaryncha* Bd.—Thick-billed Sparrow.

This appears to be the only *Passerella* occurring along the eastern slope, where it is numerous in summer and fall, and where I believe it is resident.

In a recent report (1876) I was led to combine the present bird with *P. schistacea*, separating them from the *P. townsendi* and *iliaca* mainly on the strength of the different proportions. Subsequent examination, however, has convinced me that the genus is represented by but one species, and that the three western forms, *townsendi*, *schistacea*, and *megaryncha* are but varieties of one and the same species. These under different conditions of climate have become more or less differentiated from the original type till they represent well-marked geographical races, the intergradation of which with each other and with *iliaca* it is perfectly possible to show. As noticed in an earlier part of this report, all specimens of the variety *megaryncha* from the eastern slope of the Sierras show very decided intermediate characters between the extreme condition this form assumes in the Coast Range and the *P. schistacea* from the interior, a fact to be expected from the half-way position of the region. A series connecting the two may very readily be formed. An examination of the material in the Smithsonian, much of which was collected by the expedition, enables us to speak with equal confidence of the close relationship existing between *schistacea* and *townsendi*. Specimens connecting the two in a very complete chain may easily be selected. Hitherto no specimens intermediate between *iliaca* and *townsendi* have been met with, and though the differences separating them have been chiefly modifications of color only, differences of degree of intensity and not of pattern, this has been deemed sufficient to keep them apart.

It will be remembered that the habitats of the two are, in the northwest, in close juxtaposition to each other, *iliaca* being one of quite a number of eastern birds that in the north find their way across the continent and reach Alaska. *Townsendi*, with its summer home in the northern portion of the Pacific province, also reaches Alaska, and it is probable that here the two forms come together. At all events, a series of sixteen specimens collected by the expedition in California, in 1875, presents unquestionable evidence of the intergradation of the two. Of these I do not find one which compares exactly with the usual style of *townsendi*, as it appears in specimens from Kodiak, Sitka, etc. The one extreme of this series exhibits quite a close approach to the dark olive-brown of *townsendi*, with its unstreaked dorsum; the other in its light condition quite suggests the ferruginous style of coloration of *iliaca*; such specimens have the back obsoletely streaked. One other specimen from California in the Institution so closely approaches *iliaca* that it was so labeled, and supposed in the absence of others showing its true relation to be a straggler of this species. In connection with the above suite its position as one of the series showing the intergradation of the two forms is readily seen.

The following measurements illustrate the relations, in size, the four forms bear to each other:

P. iliaca: Wing, 3.40; tail, 3.07; bill, .32; tarsus, .93; (average of ten specimens.)

P. townsendi: Wing, 3.20; tail, 3.15; bill, .49; tarsus, .94; (average of twenty-three specimens.)

P. schistacea: Wing, 3.13; tail, 3.37; bill, .44; tarsus, .91; (average of nine specimens.)

P. megaryncha: Wing, 3.21; tail, 3.58; bill, .51; tarsus, .93; (average of eight specimens.)

As will be seen from the above measurements, *schistacea* and *megaryncha* agree in having the tail considerably in excess of the wing; while in *iliaca* and *townsendi* the wing exceeds the tail. In *townsendi*, however, this discrepancy in favor of the wing is very slight, and, indeed, in some few specimens the two are equal, or the tail may even be slightly in excess of the wing. It would appear, therefore, that in respect to the relative size of these parts, *townsendi* indicates the first step in the variation, which is seen to be more marked in *schistacea*, and to find the limit in *megaryncha*.

One unexpected fact shown by these measurements is, that not only does an increase in length of tail take place in the three western varieties, a variation shown in other species, whose habitat extends from the eastern into the western province, but a decrease in size of wing. The different proportions which ensue come, then, from two

causes: first, actual increase in the length of the tail; second, actual decrease in the length of the wing.

By the above arrangement the four forms will stand as follows:

Passerella iliaca (Merr.).—Habitat: Eastern province of North America; breeds from British America northward, across to mouth of Youkon. In migrations to eastern edge of great plains; occasional in spring in Colorado (Maxwell) fide Ridgway.

Passerella iliaca, var. *schistacea* Bd.—Habitat: Middle province; restricted by western edge of plains and eastern slope of Sierras; an occasional straggler in Kansas and California in fall.

Passerella iliaca, var. *townsendi* (Aud.).—Habitat: Pacific province; breeds in northern Sierras; Southern California in winter; confined to western slope of Sierras.

Passerella iliaca, var. *megaryncha* Bd.—Habitat: Southern Sierras, eastern as well as western slope; probably a resident species.

21. *Pipilo maculatus* (Sw.), var. *megalonyx* Bell.—Long-spurred Towhee.

I saw but few Pipilos, and these on the brushy foot-hills, or in the chaparral of the mountain sides. They were extremely shy, so much so that I failed to secure specimens. They were doubtless of the above variety, as the variety *oregonus* is a more northern form.

22. *Pipilo chlorurus* (Townsend.).—Green-tailed Finch.

Not uncommon in October; probably rather numerous in summer.

ICTERIDÆ.

23. *Scolecophagus cyanocephalus* (Wagl.).—Brewer's Blackbird.

Rather numerous during the fall months on the borders of Lake Tahoe.

CORVIDÆ.

24. *Corvus corax* L.—Raven.

Not nearly so common in the mountains as in the valleys below.

25. *Picicorvus columbianus* (Wils.).—Clarke's Crow.

A very abundant resident throughout the pine-region, appearing to live exclusively upon the pine-seeds.

26. *Pica melanoleuca* L., var. *hudsonica* (Sab.).—American Magpie.

As noticed in the previous list, scarcely reaching into the mountains, and but few were seen on the immediate borders of Lake Tahoe.

27. *Cyanura stelleri* Gm., var. *frontalis* Ridg.—Blue-fronted Jay.

Very abundant on the eastern slope, here replacing the var. *macrolopha* of the Rocky Mountains. A permanent resident.

TYRANNIDÆ.

28. *Empidonax hammondi* (Xantus).—Hammond's Fly-catcher.

This was the sole representative of the family noted by us in the mountains. It probably is not uncommon as a summer resident.

CAPRIMULGIDÆ.

29. *Aurostomus nuttalli* (Aud.).—Nuttall's Poorwill.

Not uncommon in fall in the shrubbery of the open mountain sides, but avoids the pine-woods.

TROCHILIDÆ.

30. *Selasphorus rufus* (Gm.).—Rufous-backed Humming-bird.

The only humming-bird seen by us in the mountains. Very numerous in September and the first of October.

An unaccountable fact to us in connection with the present bird is the apparent absence of all adult males in the fall from localities and regions where the young and fe-

males abound. In the fall of 1875, while in Southern California, we failed to find a single adult male in the valleys, although the species was very numerously represented by adults of the other sex and by the young. The absence of the males was attributed to the fact of their having found their way into the mountains, though this seemed a hardly adequate explanation. The experience of the past season was but a repetition of that of the previous year, except that our ground of observation was exchanged for the mountains. Where females and young were to be seen by scores, a most careful search failed to discover a single adult male.

Mr. Ridgway, we learn, had a similar experience in fall along the eastern slope, and was equally at a loss to understand whither the males had betaken themselves.

ALCEDINIDÆ.

31. *Ceryle alcyon* (L.).—Belted Kingfisher.

Present on the shores of Lake Tahoe in small numbers, as on the small streams.

PICIDÆ.

32. *Picus albolarvatus* (Cass).—White-headed Woodpecker.

Numerous in the pine-woods, to which it strictly confines itself, and where it is resident.

33. *Picus villosus* (L.), var. *harrisii* Aud.—Harris's Woodpecker.

Perhaps the most numerously represented in the mountains of any of the family where resident, but not confining itself so closely to the pineries as the preceding bird.

34. *Picoides arcticus* (Sw.).—Arctic Woodpecker.

This species appears to be of rather common occurrence about Lake Tahoe, where I saw it occasionally in September, October, and November. It, without doubt, breeds here.

35. *Sphyrapicus ruber* (Gm.).—Red-breasted Woodpecker.

Apparently not very common. Probably a few breed along the eastern slope.

36. *Sphyrapicus thyroideus* (Cass).—Brown-headed Woodpecker.

Not at all uncommon in the pine-woods about Lake Tahoe, where it breeds and is a constant resident.

37. *Asyndesmus torquatus* (Wils.).—Lewis's Woodpecker.

I saw but few of this species. It is probably a summer resident, and does not winter in the region.

38. *Colaptes mexicanus* (L.).

Numerous; less so, however, in the mountains than in the valleys below.

STRIGIDÆ.

39. *Bubo virginianus* (Gm.), var. *arcticus* (Sw.).—Western Horned Owl.

Abundant; its hooting heard at every camp.

40. *Otus vulgaris* (L.), var. *wilsonianus* (Less.).—Long-eared Owl.

Common in the thickets of the meadowy lands bordering upon Lake Tahoe.

FALCONIDÆ.

41. *Falco communis* Gmel., var. *anatum* Bon.—Duck Hawk.

Met with frequently in early fall. Probably this species leaves the mountains when severe weather comes on and winters in the valleys. At all events it becomes quite common in the lower regions in November.

42. *Pandion haliaetus* L., var. *carolinensis* Gmel.—Fish Hawk.

Rather rare; one or two seen about Lake Tahoe.

43. *Circus cyaneus* L., var. *hudsonius* L.—Marsh Hawk.

Present in the meadows through the mountains, and though not nearly so numerous as below, it is still common.

44. *Buteo borealis* (Gmel.), var. *calurus* Cass.—Western Red-tailed Hawk.

Abundant. With this hawk, as is the case with most of the species, a change of habitat is made necessary in the late fall, when snow and severe weather cause the disappearance of the small mammals, reptiles, and other game upon which it preys. They then move down into the valleys and remain about the lakes, where not only are found an abundance of water fowl, but where the marshes afford them an unfailing supply of certain small rodents through the season.

45. *Archibuteo lagopus* (Brunn.), var. *sancti-johannis*.—Rough-legged Buzzard.

Very numerous. In early November, in a meadow of considerable size not far from Lake Tahoe, I found that scores of this hawk had congregated. From one to half a dozen were visible at any hour of the day, sweeping with heavy wing over the surface of the turfy ground, and now and then dropping with almost certain aim upon one of the small Meadow Rats (*Arvicola riparius*) whose excavations honeycombed the ground in all directions, and whose immense numbers accounted for the unusual abundance of the hawks at this one locality.

46. *Aquila chrysaetus* (L.)—Golden Eagle.

Apparently rather more numerous in this region than the succeeding bird.

47. *Haliaetus leucocephalus* (L.)—Bald Eagle.

Rather rare. In fact eagles are rarely abundant in any portion of the west which I have visited, and the sight of one is an event of sufficiently unusual occurrence to attract the attention and elicit comment from the most unobservant of a party. The white-headed is much more numerous as an inhabitant of either coast than as a bird of the interior.

TETRAONIDÆ.

48. *Canace obscurus* (Say.)—Dusky Grouse.

The whole pine-timbered region lying along the eastern slope of the Sierras west of the Carson Valley, was formerly the home of very great numbers of this fine bird. Some of the stories told by the early settlers of its abundance are almost incredible.

The sound of the woodman's axe is followed by the almost complete abandonment of a locality, and chiefly from this cause and from the persecution they have been subjected to at the hands of the settlers and the Indians, the localities are very few where the grouse still exist in abundance. The steep sides of many of the deep cañons have proved inaccessible to the lumberman, and still retain the primeval growth of forest. Here the grouse still maintain their foot-hold, and will continue to do so long after the surrounding country has been swept bare of woods.

PERDICIDÆ.

49. *Oreortyx pictus* (Dougl.)—Plumed Partridge; Mountain Quail.

This beautiful bird ranges from the coast across the mountains, and is found along the eastern slope, where, at an elevation of about 6,000 feet, it is quite abundant. As noticed before, it reaches the lower foot-hills, but in very much diminished numbers. Usually a resident bird wherever found; the only effect winter has upon their range is to cause them to abandon the higher elevations occupied in summer, and to appear farther down upon the mountain-sides.

The mountains of this whole region lying about Lake Tahoe seem to be entirely abandoned by the species in winter, and a very complete migration takes place during the late fall. The flocks then pass not to the South, but westward, and winter upon the western slopes of the mountains, descending to a greater or less distance toward the foot-hills, according to the depth of snow, the severity of the weather, &c. Such at least is the explanation offered by the hunters and residents for their disappearance about November from this section, where earlier they are very abundant, and which I have every reason to believe is the true one. Those living in summer on the low foot-hills about Carson remain to winter. But those whose summer habitat is higher up in the mountains proper thus make a short migration to a region better adapted to their wants.

The snow upon the eastern slope falls to a great depth, and the winter is very severe, much more so than on the western side—facts which appear to have been thoroughly acquired by experience by these birds, till the habit of migration in anticipation of winter has become a fixed and constant one.

SCOLOPACIDÆ.

50. *Gallinago wilsonii* (Temm.)—Wilson's Snipe.

But a single one of this species was seen; this in a meadowy spot on the border of Tahoe in October.

ARDEIDÆ.

51. *Ardea herodias* L.—Great Blue Heron.

Common about Lake Tahoe.

52. *Botaurus minor* Gm.—Bittern.

Numerous on Lake Tahoe.

RALLIDÆ.

53. *Rallus virginianus* L.—Virginia Rail.

Saw but one, in a marsh near Lake Tahoe.

54. *Fulica americana* Gm.—Coot.

Extremely abundant in October and November about and on the lake.

ANATIDÆ.

55. *Anser hyperboreus* Pall.—Snow Goose.

Appears from the north in flocks in October, and sometimes make use of the lake as a temporary stopping-place.

56. *Branta canadensis* (L.)—Canada Goose.

Passes over the lake in great flocks, but less often rests here.

57. *Anas boschas* L.—Mallard.

Numerous in fall. This species appears to breed regularly in the little ponds and lakelets that abound in the mountains, and two or three flocks, each a little family group, will often be encountered in such places in fall ere they have started out in search of winter quarters.

58. *Mareca americana* Gm.—Baldpate.

Also occurring in fall.

59. *Querquedula carolinensis* (Gm.)—Green-winged Seal.

The only teal I saw about the lake. This species is rather numerous.

60. *Spatula clypeata* (L.)—Shoveller.

Probably breeds about the lake, but only in small numbers.

61. *Fuligula collaris* (Donovan.)—Ring-necked Duck.

In small numbers in fall; probably summers in the marshes of the lake.

62. *Oedemia* ——?

One of the large Sea Ducks occurs here in fall, and I saw several off the shores of the lake; the species I was unable to determine satisfactorily.

63. *Mergus serrator*, L.—Red-breasted Merganser.

A few seen on the lake in October.

PELECANIDÆ.

64. *Pelecanus trachyrhynchus* Lath.—White Pelican.

Occasionally a flock strays on to the waters of the lake in fall.

GRACULIDÆ.

65. *Graculus dilophus* (Sw.)—Double-crested Cormorant.

A few of this species are said to pass the summer on the lake, where, however, they do not breed. They appear to leave the lake early in October, and I saw none at the time of my visit. Mr. Ridgway has identified the form from this region as the above

LARIDÆ.

66. *Larus delawarensis* Ord.—Ring-billed Gull.

I shot a single immature gull on Lake Tahoe, November 1, which I refer with but little doubt to this species. I am unable to state the numerical proportion which this bird bears to the next in this region during the late fall. According to Mr. Ridgway it should replace entirely in winter the next species.

67. *Larus californicus* Lawr.—Californian Gull.

Of five gulls shot on Tahoe, about November 1, four appear to belong to this species. They unquestionably winter here.

COLYMBIDÆ.

68. *Colymbus torquatus* Brunn.—Great Northern Diver.

I saw a number of specimens in possession of Mr. McKinney, which he had shot on the lake in fall. They do not appear to be very numerous.

69. *Podiceps auritus* (L.), var. *californicus* (Heerm.)—American Eared Grebe.

Very numerous all along the borders of Tahoe in fall. So utterly fearless and unsophisticated are they that they swim about the wharves, utterly regardless of the presence of humans but a dozen or twenty feet away.

APPENDIX J.

REPORT UPON THE HEMIPTERA COLLECTED DURING THE YEARS 1874 AND 1875, BY
MR. P. R. UHLER.

PEABODY INSTITUTE, BALTIMORE, MD.,
March 24, 1877.

SIR: I have the honor to transmit the following report upon the Hemiptera collected by the expedition during the years 1874 and 1875.

Very respectfully, your obedient servant,

P. R. UHLER.

Lieut. GEO. M. WHEELER,
Corps of Engineers, in charge.

HETEROPTERA.

SUBFAMILY EURYGASTRINÆ.

Eurygaster, Lap.*E. alternatus*.

Tetyra alternata, Say; Amer. Ent. iii, tab. 43, fig. 3.

Eurygaster alternatus, Dallas; Brit. Mus. List. Hemipt. i, p. 47, No. 1.

San Ildefonso, N. Mex., September, 1874, collected by Dr. H. C. Yarrow; also, near Colorado River, California, July 20, by William Somers.

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